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Elementary Principles of Chemical Processes

Second Edition

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TABLE 2.3-1

SI and CGS Units

Base Units		
Quantity	Unit	Symbol
Length	meter (SI)	m
	centimeter (CGS)	cm
Mass	kilogram (SI)	kg
	gram (CGS)	g
Moles	gram-mole	mol or g-mole
Time	second	s
Temperature	kelvin	K
Electric current	ampere	A
Light intensity	candela	cd

Multiple Unit Prefixes

Mega (M) $= 10^6$
Kilo (k) $= 10^3$
Centi (c) $= 10^{-2}$
Milli (m) $= 10^{-3}$
Micro $(\mu) = 10^{-6}$
Nano (n) $= 10^{-9}$

Derived Units

Quantity	Unit	Symbol	Equivalent in Terms of Base Units
Volume	liter	l or L	0.001 m^3
			1000 cm^3
Force	newton (SI)	N	$1 \text{ kg} \cdot \text{m/s}^2$
	dyne (CGS)		$1 \text{ g} \cdot \text{cm/s}^2$
Pressure	pascal (SI)	Pa	1 N/m^2
Energy, work	joule (SI)	J	$1 \text{ N} \cdot \text{m} = 1 \text{ kg} \cdot \text{m}^2/\text{s}^2$
	erg (CGS)		$1 \text{ dyne} \cdot \text{cm} = 1 \text{ g} \cdot \text{cm}^2/\text{s}^2$
	gram-calorie	cal	$4.184 \text{ J} = 4.184 \text{ kg} \cdot \text{m}^2/\text{s}^2$
Power	watt	W	$1 \text{ J/s} = 1 \text{ kg} \cdot \text{m}^2/\text{s}^3$

difficulties associated with it. The first is the occurrence of conversion factors (such as 1 ft/12 in.) which, unlike those in metric systems, are not multiples of ten; the second, which has to do with the unit of force, is discussed in the next section.

Factors for converting from one system of units to another may be obtained by taking ratios of quantities listed in the table on the inside front cover of this book. A larger table of conversion factors is given on the inside back cover of *Perry's Chemical Engineers' Handbook*,[1] and still another table is given on pp. 1-4 through 1-18 of the *Handbook*.

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[1] R. H. Perry and D. W. Green, Eds., *Perry's Chemical Engineers' Handbook*, 6th Edition, McGraw-Hill, New York, 1984.